COMROD
Reaching further

Masts, telescopic and sectional
Communication Masts

- Sectional composite masts for manportable applications up to 9 metres
- Telescopic push-up masts up to 10 metres
- Telescopic aluminium, composite & carbon fibre masts for heights up to 36 meters, head loads up to 300kg.
- All products are manufactured at our facilities in Norway and France.

The most complete selection of masts in the industry!

- Hand crank or motorized
- Computer control available.
Surveillance Masts

- Composite and Aluminium masts available
- Supports On-The-Stop and On-The-Move operations
- Short nested length vs deployed height for constrained spaces
- High stability design supports most sensor and surveillance applications
- Supports steeply sloping terrain
- Off-the-shelf systems available
- Can be customized for optimal vehicle integration
CAPAS Positioning Systems

- **Precise** control of mast height and antenna direction
- **Flexible** and **robust** systems to quickly set up microwave communications.
- Allow soldiers to achieve optimal communication with **very little training**.
- **Remote control** of communication systems including alignment and adjustment of mast height.
- Integrated digital compass for **accurate** antenna alignment.
Telescopic & Sectional Masts

- Sectional masts - composite - man portable to heavy duty
- Telescopic masts - aluminium and composite - lightweight to heavy duty
- Guyed and Un-guyed (self supporting) masts - composite and aluminium
- Full range of masts suited to elevating:
  - Tactical antennas
  - Line of sight (LOS) antennas
  - Electronic Warfare: direction finding, jamming
  - Radar
  - Sensors
  - Optronic equipment
  - Missile ground stations

15 meter ULM series composite sectional mast
Manpack Sectional Masts

- Man portable lightweight composite sectional masts
- Heights available up to 9 metres
- Top loads up to 10kg
- 5-10 minute set up time

MUL-9 - 9 metre Ultra-lightweight Sectional Mast

AMX54 - 5.4 metre mast

AMX85 - 8.5 metre mast
Masts – Telescopic Push-up

- Push up telescopic composite mast
- Tubes locked in position by a bayonet system
- Ideal for lighter headloads such as HF wire antennas and VHF elevated antennas
- Ground, tripod or vehicle installation
- From 3.5 to 9m
- Fibreglass composite material for RF transparency
ULM Series Tripod Sectional Mast

- Composite sectional masts
- Heights up to 36 meters
- Top loads up to 100kg
- 48mm or 125mm diameter tube sections
- Composite tube sections: Carbon or glass-fibre
- Option to mount antennas at intermediate positions
- Central guy system for safe deployment in high winds
- Kevlar or steel guy ropes
MLV Series Heavy Duty Tripod Mast

- Heavy duty composite tripod sectional mast
- Heights up to 36 meters
- Top loads up to 100kg
- Composite tubes: Carbon or glass-fibre
- Option to mount antennas at intermediate positions
- Central guying system with stainless steel cables
- Tubes deployed manually or with optional 220V/ac or 24V/dc motor
- Excellent top load stability
TM Series Aluminium Telescopic Masts

- Formally WIBE TM, acquired by COMROD in 2011
- Hexagonal aluminium telescopic masts, with tubes sliding on plastic bearings
- Lightweight to heavy duty masts
- Hand cranked operation with optional electrical motor winch.
- More than 10,000 masts in operation worldwide
Light weight aluminium telescopic mast - hexagonal tube sections

- Heights up to 18 meters
- Top loads up to 50kg
- Ground deployed or vehicle/shelter mounted
- Aluminium hexagonal tubes
- Hand crank deployment
- Thousands in use worldwide
TM Series – Heavy Duty

- Heavy duty aluminium telescopic mast
- Heights up to 30 meters
- Top loads up to 120kg
- Ground deployed or vehicle/shelter mounted
- Aluminium hexagonal tubes
- Hand crank or motorised winch deployment
TM Series Electromechanical

- Un-guyed (self supporting) telescopic masts
- Heights up to 18 metres
- Top loads up to 350 kg
- 24V/DC electrical drive with automatic top and bottom end travel limits
- Computer controlled height option
- Easily integrated inside vehicles or shelters
TM Series – Vehicle and Shelter Brackets

- Vehicle and shelter brackets for aluminium telescopic masts
- Fixed, hinged and pull-out brackets available to suit customer requirement
- Motorised pull-out brackets available for heavy masts
- Brackets available to suit all masts and base tube sizes
Composite Telescopic Masts

- Glass fibre and carbon/glass fibre composite telescopic masts.
- Lightweight to heavy duty masts
- Ground mounted to full vehicle/shelter integration
- Lightweight hand cranked to fully computer controlled deployment.
- Masts in operation worldwide
Medium Duty Composite Telescopic Masts

- Composite telescopic masts
- Heights up to 24 metres
- Top loads up to 100kg
- Ground deployed or vehicle/shelter mounted
- Carbon composite or glass fibre construction
- Excellent top load stability
- Manual or motorised winch option
IDTM – Vehicle and Shelter Brackets

- Roof Carriage System- Rear Deployment
- Vehicle/shelter mounting brackets for IDTM masts deployed to the rear.
- The brackets allow for the safe deployment while supporting the weight of the mast

- Roof Carriage System- Side Deployment
- Vehicle/shelter mounting brackets for IDTM masts deployed to the side.
- The brackets allow for the safe deployment while supporting the weight of the mast
LMT SERIES

- Electromechanical Composite Mast
- Un-guyed (self supporting) telescopic masts
- Heights from 2.5 to 30 meters
- Top loads up to 300 kgs
- Manufactured using carbon/glass composite tubes
- Automated controls
- Remote control by PC
- Custom designed solutions
LMT SERIES – Surveillance Mast

- 2m heavy duty mast, PC controlled, for Electro-Optic systems - LMT 283/2-0.75
- On-The-Move operation
- Easy maintenance: no need to dismount top load to change the belt
- 75cm nested
- 2m deployed
- Top load: 40kg, 0.5 sq.m
- Pointing accuracy: ±0.1° (50km/h wind)
- Angular deviation due to mechanical play:
  - In flexion: 0.4° max
  - In twist: 0.1° max.
- on-board feeding: 28V/DC (MIL-STD-1275D)
- EMC compliant (MIL-STD-461-F and EN-61000)
ULM-48 : General description

- Ultra-lightweight carbon composite tripod mast for headloads up to 20kg (44 lbs)
- Supports payloads including omni-directional & directional antennas, sensors, lighting, etc.
- Aluminum tripod support including a lifting mechanism and hoist
- Telescopic tripod legs allow deployment on uneven ground
- Tripod height of 1.2 meters allows easy access to top load
- Central guying enables the guy tension to be maintained during deployment. This enables the mast to be deployed safely in high winds
- Supplied with a ground mounting kit containing all the items required for field deployment.
- Optional antenna mounting kit can be supplied to allow an omni-directional antenna to be mounted below the top load.
- Can be deployed by two operators in less than 20 minutes.
- Full compliance with ANSI TIA/EIA-222-F wind standard.
ULM-C 48/15-1.3 Specifications

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ULM-C 48/15-1.3 mast: main features in pictures

- **Lifting system:** rope and pulleys
- **Twist and lock on 360°**
- **Central guy system for safe deployment**
- **Reeling / unreeling ropes made easy**
- **Bubble levels on 2 axis**
- **Lifting shoe**
- **Rotating guy collar**
- **Fast tensioner with stainless steel cable**
- **Adjustable legs on ±10° slope**
ULM-C 48/15-1.3 BOM
(DETAMS Version)
CAPAS Alignment Systems

- Comrod Automatic Payload Alignment System
- A family of intelligent systems designed to accurately position – raise, rotate and elevate – any payload to maximize its utility.
- Rotators and rotator tilters that can be commanded to the desired absolute bearing at high accuracy.
- Electromechanical masts that are aware of their extended height, their deployed angle, wind loads etc.
- Mission planning system that supports geospatial planning, radio propagation analysis, frequency planning, network planning as well as integration with masts and rotators.
- All systems connected to a common resilient data bus (CAN). Daisy chaining of power and communications. Plug and Play, not Plug and Pray.
- Systems can optionally connect to external systems through a wide range of supported interfaces. RS-232, Ethernet, RS-485, CAN.
CAPAS-DR Overview

- CAPAS Automatic Double Rotator
- *Dual single-axis* rotators in a compact form factor
- Based on combat proven mechanical components.
- 360° Rotation. (Endless rotation.)
- Electronic Magnetic compass built-in.
- Available with Differential GPS compass → System accuracy better than 1.5°. Approximate bearing acquisition time: 5 minutes or better.
- Accelerometers to detect mast deflection.
- 2 x 90W brushless motors for durability.
- Full speed >15°/s.
- Maximum antenna rotation torque > 100Nm dynamic, >200Nm Static
CAPAS-RT Overview

- Automatic Rotator/Tilt System
- *Single dual-axis* system
- Based on combat proven mechanical components.
- 100% shared electronics with CAPAS-DR, SR
- 22° (±11°) Elevation control
- 360° Rotation. (Endless rotation.)
- Electronic Magnetic compass built-in.
- Available with Differential GPS compass → System accuracy better than 1.5°. Approximate bearing acquisition time: 5 minutes or better.
- Accelerometers to detect mast deflection.
- 2 x 90W brushless motors for durability.
- Full speed >15°/s.
- Maximum antenna rotation torque > 100Nm dynamic, >200Nm Static
CAPAS-SR Overview

- CAPAS Automatic Single Rotator
- Single single-axis system
- Based on combat proven mechanical components.
- 100% shared electronics with CAPAS-DR, RT
- 360° Rotation. (Endless rotation.)
- Electronic Magnetic compass built-in.
- Available with Differential GPS compass → System accuracy better than 1.5°. Approximate bearing acquisition time: 5 minutes or better.
- Accelerometers to detect mast deflection.
- 2 x 90W brushless motors for durability.
- Full speed >15°/s.
- Maximum antenna rotation torque > 100Nm dynamic, >200Nm Static
CAPAC-MC Overview

- CAPAS Mast Control
  – features:
    - Shared electronics with other CAPAS products including CAPAS-DR, CAPAS-SR and CAPAS-RT.
    - Common data bus with other CAPAS products.
    - Rotary absolute encoder for accurate positioning

- Ideal for vehicular applications and unmanned shelters.

A Fully Integrated Solution!
Open Loop Alignment

- Mission planning system – developed by Frontend AB in Sweden.
- World’s only system to support both signal propagation analysis as well as signal troop deployment planning in Time and Space.
- Aware of equipment list for each vehicle. Prevents planning with capabilities one does not have.
- Suggests possible links based on equipment and terrain profile.
- Coverage planning for frequencies from HF to SHF.
- Versatile map engine supports most standard georeferenced formats.
- Mission plan can be deployed as an XML file via CAN network – could also be uploaded directly from radio.
Closed Loop Alignment

- CAPAS closed loop alignment algorithm provides quick and precise alignment when a feedback loop is available.
- Requires RSSI, UBR, BER or similar measure from supported radios.
- Can support both “rough and fine” measures of signal quality, for instance an AGC signal for course tuning and BER for fine tuning.
- Support initiation commands from radio - Customers could initiate search through the radio configuration interface.
Thank you! Questions?